Colorado River Storage Project
Flaming Gorge Working Group
Meeting Minutes
August 26, 2009

Participation

This meeting was held at Western Park, Vernal, Utah. Attendees are listed below.

Purpose of Meeting

The purpose of operation meetings (held in April, and August) is to inform the public and other interested parties of Reclamation's current and future operational plans and to gather information from the public regarding specific resources associated with Flaming Gorge Reservoir. In addition, the meetings are used to coordinate activities and exchange information among agencies, water users, and other interested parties concerning the Green River.

General

Ed Vidmar called the meeting to order at 7:00 p.m. with 12 present (see list of attendees below). Ed introduced himself and indicated that this year's hydrology presentation would be done by Heather Patno. Proposals would be presented by Clayton Palmer with Western Area Power Administration (Western) followed by open discussion and questions. Before starting, all present introduced themselves and their affiliations.

Flaming Gorge Hydrology Analysis and Forecasted Operations

Heather Patno introduced herself as the hydrologist in charge of releases out of Flaming Gorge Dam and maintaining reservoir elevations. See the presentation posted on the website that corresponds to the discussion below.

2006 Record of Decision Operating Criteria

Heather Patno reviewed the 2006 Record of Decision (ROD) operating criteria for Flaming Gorge Dam and Reservoir. She reviewed the three reaches of the Green River and the five hydrologic classifications. Heather reviewed the hydrologic conditions in the spring of 2009, which were average, and reviewed the average classification targets. She also reviewed the base flow targets under average conditions and flow flexibility around those targets.

Hydrology Overview

Heather then reviewed the average and observed hydrologic information for Flaming Gorge Reservoir. April through July observed unregulated inflow into Flaming Gorge reservoir was 1,197,000 acre-feet (af), or 101 percent of average inflow. June precipitation in the Upper Green River Basin was 245 percent of average. July unregulated inflow was 284,000 af or 110 percent of the monthly average. Flaming Gorge reached its high elevation on July 18 at 6033.7 feet at 3,495 million acre-feet (maf) or 93 percent of live storage capacity. Flaming Gorge elevation increased 13 feet from the beginning of June through the middle of July because of the June precipitation in the basin.

Heather reviewed the monthly and seasonal precipitation for the Green and Colorado River Basins. October was a very dry month with below average precipitation, but December had above-average precipitation throughout most of the basin, although the Green River saw only average snowpack in December. March was dry, but the April and May precipitation were higher than average in the Green River Basin which increased the overall seasonal precipitation to average. It also resulted in the increased reservoir storage and elevation.

Water Year 2009 Spring and Summer Operation

Based on the May final forecast, an average hydrologic classification was determined for the spring period as outlined in the Flaming Gorge Record of Decision. Under this classification and in coordination with the Upper Colorado Endangered Fish Recovery Program, the spring objectives this year were: (1) five consecutive days of 15,000 cubic feet per second (cfs) or greater and, (2) an instantaneous peak release of 18,600 cfs. Both spring objectives for Flaming Gorge Dam were met.

The Yampa River historically has two peaks during spring runoff. This year there were seven peaks as the weather patterns warmed and cooled multiple times during the month of May. The largest peak was later in the month of May; however, spring objectives were met.
The base flow period shows decreasing fluctuation as the Yampa River flows decrease. When the Yampa River flows higher, there is greater river bank area within which Flaming Gorge hourly releases can attenuate as they travel downstream.

Current Hydrology

The reservoir is 92 percent full. Average daily inflow is 1,500 cfs and daily release is 2,025 cfs. Heather reviewed the April maximum and minimum elevations that are based on the maximum and minimum forecasted unregulated inflow into Flaming Gorge Reservoir. June and July elevations ranged from the minimum probable elevation at the beginning of June to the maximum probable elevation in July. Forecasted operations presented will usually fall within the minimum and maximum probable range, with a 20 percent probably that operations will fall outside of that range. The most probable or median forecasted elevations indicate a 50 percent probability that operations will either be above or below that forecasted. It is not expected that operations will be the most probable or median.

The most probable operations for August forecast elevations between 6,022 and 6,037 feet. The maximum probable elevation in the spring is lower than either the minimum or most probable because the reservoir is drawn down to 6,023 feet under wet hydrologic scenarios rather than the 6,027 feet under average conditions in order to accommodate higher inflows and maintain dam safety requirements.

The range of average daily base flows that were projected in April was reviewed. The base flow releases during June through August fell within the projected base flow ranges for the summer and winter maximum releases. The current projected daily release during the winter base flow period (October through February) is 1,775 cfs. Releases are projected to fall within a range of 1,250 to 2,600 cfs in order to draw the reservoir down to a projected elevation of 6,027 feet under average hydrologic conditions.

Temperature and Selective Withdrawal Structure

The temperature profile of Flaming Gorge Reservoir and the selective withdrawal structure (SWS) were discussed. The temperature varies in the summer months and the design of the SWS is such that water temperatures will vary daily depending on the thermal structure of the reservoir. The reservoir elevation is decreasing and temperature mixing is occurring which is effecting the water release temperature. This can be seen on the USGS Green River near Greendale, Utah streamgage. The SWS is currently 40 feet below reservoir elevation. This is the highest level the SWS gates can be raised otherwise vortexes occur.

Questions

How quickly can Reclamation respond to moving the SWS? Reclamation can change the gates in minutes, but the SWS elevation is not very accurate. The SWS must be moved feet at a time rather than inches. The SWS operational plan outlines that the SWS be lowered in October. UDWR requested coordination with Reclamation regarding the timing of the lowering of the SWS. UDWR is interested in coordinating both the timing of the initial decrease in SWS elevation, as well as a gradual decrease over time. The individuals involved in the coordination are Dave Speas, Steve Hulet, and Heather Patno. There will be UDWR electrofishing flows of 1,600 cfs steady the nights of September 14 and 15.

Western Area Power Administration Base Flow Proposal

Clayton Palmer described their proposal in three parts (1) daily operations, (2) base flow request, and (3) the three agency trout studies. Clayton described their daily operations and gave background of Western's purpose, how they generate and contract power, and how the different reservoirs network together in the delivery of power. They are a non profit organization. They remain efficient to benefit the consumer. It is an efficient way to do business if Western can operate in a way to increase power production to meet increases in consumer peaks within a day. Consumers have peak use times during the day and Western is trying to meet that demand. The base flow requirements in the EIS ROD have flexibility around the mean daily average. After the requirements of the EIS ROD are met and ESA compliance is satisfied another authorized purpose of the dam is to generate power. Western can go a long way to meet customer's demands and generate power within the flexibility in the EIS ROD.

Western would like the base flow to be at a minimum of 800 cfs immediately following the spring peak and remain low during the summer with a single peak in the summer during the day. Western would like higher fluctuating base flows during the winter when consumers demand is a double peak each day. Western would prefer to shape the water release to meet these demands and to help deliver on contracts. Clayton showed one graph for most probable winter operations (November through February) with a double peak. It started with 895 cfs and increased to 3,140 cfs from 6 to 8 in the morning, down again to 800 cfs at one in the afternoon and back up again to 3,000 cfs from 5 to 7 in the evening and down again to 800 cfs at midnight. Upramp rates would not exceed 800 cfs/hour for safety concerns. This idea is being tested. The downramp rate would be 1,000 cfs/hour. The flows this year are a higher daily average than those seen for a while. Hydrologic conditions turning dry may change this.

Heather responded to Westerns double peak request by saying that Reclamation has not had an opportunity to model the double peak numbers presented today and Reclamation does not know at this time if the request falls within the requirements of the 2006 ROD. She will run the

numbers Western provided through the SARR (Streamflow Syntheses and Reservoir Regulation) model that has been calibrated for the Green River system.

Western, Reclamation and UDWR have entered into studies to see what impacts these single and double peaks have on the trout below the dam. All three agencies have been contributing funds and are working together on these studies. They agreed to a five year study. On the 14th and 15th of this month they are sampling, measuring, weighing trout and looking at the overall health condition of each fish. They are placing pit tags on individuals and that is going a long way in determining the individual growth rates and condition of the trout.

The five-year study plan, which has not been finalized, will look at the health condition and abundance of trout. It will look at invertebrate populations and whether the flow fluctuations affect feeding behavior in trout. Fishability, as well as the health of the fish, is becoming an issue because the flows appear to disadvantage feeding. Western wants to find a scenario where the flows do not significantly harm the fish. The double peak flow fluctuations do not tend to break up ice cover on the river below the dam. UDWR sees the following areas that need to be studied:

1 – Young of year spawning needs;
2 – Trout redds may be desiccated. However, trout should be off their redds by the time fluctuating flows are started;
3 – Survival and recruitment in the trout population needs to be investigated;
4 – Passive integrated transponder (PIT) tags re being placed in fish caught during electrofishing efforts. 6,000 fish have been tagged so far.

Preliminary data from electrofishing efforts show that during fairly steady flows the trout condition has remained stable.

Comments on the proposed releases should be provided to Western and Reclamation. Clayton Palmer provided his email and phone if anyone has questions: cspalmer@wapa.gov

Next Meeting

Ed announced the tentative date for the next Flaming Gorge Working Group meeting will be Wednesday, April 27, 2009, at 7 p.m. at Western Park in Vernal.

Presentations

Yampa River Historic Flow Graphs
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/Green River Historical Flows.pdf
Hydrology Presentation August 2009
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/FlamingGorgeWorkGroup_Aug09.pdf
Western Proposal
http://www.usbr.gov/uc/water/crsp/wg/fg/pdfs/WAPA_Aug09.pdf

Previous Meeting Minutes

Flaming Gorge Working Group Meeting Minutes:
April 15, 2009

August 20, 2008
April 16, 2008
August 23, 2007
April 19, 2007
August 22, 2006
April 13, 2006
November 2, 2005
October 28, 2005
August 25, 2005
April 20, 2005
August 19, 2004
April 15, 2004

Attendees

Name	Representing	Email
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